

WHAT IS CLAIMED

- 1 1. A method for applying a patch to a computer system, wherein the patch
2 includes content to add to the computer, comprising:
3 determining at least one of installed hardware and software components on the
4 computer;
5 generating a computer object including configuration information on the determined
6 installed components;
7 providing at least one patch including content to add to the computer, wherein each
8 patch is capable of being associated with at least one realization, wherein each realization
9 defines a state of the computer;
10 for each realization, determining from the configuration information in the computer
11 object whether the state defined by the realization exists in the computer;
12 writing data to the computer object indicating whether the state defined by the
13 realization exists on the computer; and
14 using the computer object to determine whether each patch is compatible with the
15 installed components of the computer.
- 1 2. The method of claim 1, wherein the patch content to add to the computer is
2 capable of comprising one of: a new program; an upgrade to an installed program; a fix to an
3 installed program; and documentation.
- 1 3. The method of claim 1, wherein one realization is capable of being dependent
2 on another realization in the computer object, further comprising:
3 determining whether the realization is dependent on at least one base realization; and
4 if the realization is dependent on at least one base realization, performing:

- 5 (i) determining whether the computer object includes information on the base
6 realizations; and
7 (ii) if the computer object does not include information on the base realizations,
8 then throwing an exception.

1 4. The method of claim 3, further comprising:
2 in response to throwing the exception, preventing each patch associated with at least
3 one realization dependent from the base realization not written to the computer object from
4 being installed.

1 5. The method of claim 1, wherein writing data to the computer object indicating
2 that the state exists comprises:
3 indicating in the computer object that the state defined by the realization exists in the
4 computer if the state exists on the computer; and
5 indicating in the computer object that the state defined by the realization does not exist
6 on the computer if the state does not exist on the computer.

1 6. The method of claim 1, wherein determining from the computer object whether
2 the state exists on the computer includes determining whether information on one previously
3 considered realization is written to the computer object.

1 7. The method of claim 1, wherein each patch is further associated with a patch
2 expression that is capable of processing the computer object to determine whether to add the
3 content from the patch onto the computer.

1 8. The method of claim 1, further comprising downloading one or more realization
2 detectors, wherein each realization detector is used to check at least one realization, and
3 wherein each realization detector includes detector code to determine whether states defined by
4 realizations exist on the computer and to write data to the computer object concerning the
5 existence of the determined states.

1 9. The method of claim 1, further comprising:
2 downloading a plurality of patches to the computer, each including content to add to the
3 computer, wherein the steps of executing the realization routine, writing data to the computer
4 object, and using the computer object to determine whether the patch is compatible with the
5 installed components of the computer is performed on the computer.

1 10. The method of claim 9, further comprising:
2 generating a list of all patches determined to be compatible with the installed
3 components of the computer; and
4 rendering the list of patches on an output device to enable a user to select the content of
5 one or more of the patches on the list to add to the computer.

1 11. The method of claim 1, further comprising:
2 maintaining, at a network administrator system, a plurality of computer objects
3 associated with a plurality of computers on a network, wherein each computer object includes
4 the configuration information on the determined installed components of one computer on the
5 network, and wherein the steps of determining whether the state defined by the realization exists
6 on the computer, writing data to the computer object, and using the computer object to
7 determine whether the patch is compatible with the installed components of the computer on the
8 network is performed for computer objects on the network administrator system.

1 12. The method of claim 11, further comprising:
2 maintaining a plurality of patches at the network administrator system, wherein
3 determining the states defined by the realizations, writing data to the computer object, and using
4 the computer objects to determine whether the patch is compatible with the installed
5 components of the computers on the network is performed for each patch available to the
6 network administrator system.

1 13. The method of claim 12, further comprising:
2 generating a list of all patches determined to be compatible with the installed
3 components of the computers on the network; and
4 rendering the list of patches on an output device to enable a user of the network
5 administrator system to select the code of one or more of the patches on the list to install on one
6 or more of the computers in the network.

1 14. The method of claim 1, wherein the content comprises a fix, and wherein the
2 state defined by the realization is capable of indicating whether the computer is susceptible to a
3 bug corrected by the fix.

1 15. The method of claim 1, wherein determining the at least one of installed
2 hardware and software components comprises:
3 executing a detector program on the computer to process files in the computer to
4 determined installed hardware and software components on the computer.

1 16. The method of claim 15, wherein determining the at least one of installed
2 hardware and software components comprises:

3 receiving user input indicating installed hardware and software components on the
4 computer.

1 17. The method of claim 16, wherein the user input is received by:
2 displaying a user interface presenting user selectable software and hardware
3 components; and
4 receiving user selection of software and hardware components from the displayed user
5 interface, wherein the received user input indicating the installed hardware and software
6 components comprises the components selected from the user interface.

1 18. The method of claim 1, wherein reading and writing performed as part of
2 adding content to the computer is restricted to the computer object on the computer.

1 19. A system for applying a patch, wherein the patch includes content to add,
2 comprising:
3 means for determining at least one of installed hardware and software components on
4 the computer;
5 means for generating a computer object including configuration information on the
6 determined installed components;
7 means for providing at least one patch including content to add to the computer,
8 wherein each patch is capable of being associated with at least one realization, wherein each
9 realization defines a state of the computer;
10 means for determining from the configuration information in the computer object for
11 each realization whether the state defined by the realization exists in the computer;
12 means for writing data to the computer object indicating whether the state defined by
13 the realization exists on the computer; and

14 means for using the computer object to determine whether each patch is compatible
15 with the installed components of the computer.

1 20. The system of claim 19, wherein the patch content to add to the computer is
2 capable of comprising one of: a new program; an upgrade to an installed program; a fix to an
3 installed program; and documentation.

1 21. The system of claim 19, wherein one realization is capable of being dependent
2 on another realization in the computer object, further comprising:

3 means for determining whether the realization is dependent on at least one base
4 realization; and

5 means for performing, if the realization is dependent on at least one base realization:

6 (i) determining whether the computer object includes information on the base
7 realizations; and

8 (ii) if the computer object does not include information on the base realizations,
9 then throwing an exception.

1 22. The system of claim 21, further comprising:

2 means for preventing each patch associated with at least one realization dependent from
3 the base realization not written to the computer object from being installed in response to
4 throwing the exception.

1 23. The system of claim 19, wherein the means for writing data to the computer
2 object indicating that the state exists further performs:

3 indicating in the computer object that the state defined by the realization exists in the
4 computer if the state exists on the computer; and

5 indicating in the computer object that the state defined by the realization does not exist
6 on the computer if the state does not exist on the computer.

1 24. The system of claim 19, wherein the means for determining from the computer
2 object whether the state exists on the computer further performs determining whether
3 information on one previously considered realization is written to the computer object.

1 25. The system of claim 19, wherein each patch is further associated with a patch
2 expression, further comprising means for processing the patch and the computer object to
3 determine whether to add the content from the patch onto the computer.

1 26. The system of claim 19, further comprising:
2 means for downloading one or more realization detectors, wherein each realization
3 detector is used to check at least one realization, and wherein each realization detector includes
4 detector code to determine whether states defined by realizations exist on the computer and to
5 write data to the computer object concerning the existence of the determined states.

1 27. The system of claim 19, further comprising:
2 means for downloading a plurality of patches to the computer, each including content to
3 add to the computer, wherein the means for executing the realization routine, writing data to the
4 computer object, and using the computer object to determine whether the patch is compatible
5 with the installed components of the computer is performed in the computer.

1 28. The system of claim 27, further comprising:
2 means for generating a list of all patches determined to be compatible with the installed
3 components of the computer; and

4 means for rendering the list of patches on an output device to enable a user to select the
5 content of one or more of the patches on the list to add to the computer.

1 29. The system of claim 19, further comprising:
2 means for maintaining a plurality of computer objects associated with a plurality of
3 computers on a network, wherein each computer object includes the configuration information
4 on the determined installed components of one computer on the network.

1 30. The system of claim 29, further comprising:
2 means for maintaining a plurality of patches, wherein determining the states defined by
3 the realizations, writing data to the computer object, and using the computer objects to
4 determine whether the patch is compatible with the installed components of the computers on
5 the network is performed for each patch available to the network administrator system.

1 31. The system of claim 32, further comprising:
2 means for generating a list of all patches determined to be compatible with the installed
3 components of the computers on the network; and
4 means for rendering the list of patches on an output device to enable a user of the
5 network administrator system to select the code of one or more of the patches on the list to
6 install on one or more of the computers in the network.

1 32. The system of claim 19, wherein the content comprises a fix, and wherein the
2 state defined by the realization is capable of indicating whether the computer is susceptible to a
3 bug corrected by the fix.

1 33. The system of claim 19, wherein the means for determining the at least one of
2 installed hardware and software components performs:
3 executing a detector program on the computer to process files in the computer to
4 determined installed hardware and software components on the computer.

1 34. The system of claim 33, wherein the means for determining the at least one of
2 installed hardware and software components performs:
3 receiving user input indicating installed hardware and software components on the
4 computer.

1 35. The system of claim 34, further comprising:
2 means for displaying a user interface presenting user selectable software and hardware
3 components; and
4 means for receiving user selection of software and hardware components from the
5 displayed user interface, wherein the received user input indicating the installed hardware and
6 software components comprises the components selected from the user interface.

1 36. The system of claim 19, wherein the means for reading and writing performed
2 as part of adding content to the computer is restricted to the computer object on the computer.

1 37. An article of manufacture for applying a patch to a computer system, wherein
2 the patch includes content to add to the computer, by:
3 determining at least one of installed hardware and software components on the
4 computer;
5 generating a computer object including configuration information on the determined
6 installed components;

7 providing at least one patch including content to add to the computer, wherein each
8 patch is capable of being associated with at least one realization, wherein each realization
9 defines a state of the computer;
10 for each realization, determining from the configuration information in the computer
11 object whether the state defined by the realization exists in the computer;
12 writing data to the computer object indicating whether the state defined by the
13 realization exists on the computer; and
14 using the computer object to determine whether each patch is compatible with the
15 installed components of the computer.

1 38. The article of manufacture of claim 37, wherein the patch content to add to the
2 computer is capable of comprising one of: a new program; an upgrade to an installed program;
3 a fix to an installed program; and documentation.

1 39. The article of manufacture of claim 37, wherein one realization is capable of
2 being dependent on another realization in the computer object, further comprising:
3 determining whether the realization is dependent on at least one base realization; and
4 if the realization is dependent on at least one base realization, performing:
5 (i) determining whether the computer object includes information on the base
6 realizations; and
7 (ii) if the computer object does not include information on the base realizations,
8 then throwing an exception.

1 40. The article of manufacture of claim 39, further comprising:
2 in response to throwing the exception, preventing each patch associated with at least
3 one realization dependent from the base realization not written to the computer object from
4 being installed.

1 41. The article of manufacture of claim 37, wherein writing data to the computer
2 object indicating that the state exists comprises:
3 indicating in the computer object that the state defined by the realization exists in the
4 computer if the state exists on the computer; and
5 indicating in the computer object that the state defined by the realization does not exist
6 on the computer if the state does not exist on the computer.

1 42. The article of manufacture of claim 37, wherein determining from the computer
2 object whether the state exists on the computer includes determining whether information on
3 one previously considered realization is written to the computer object.

1 43. The article of manufacture of claim 37, wherein each patch is further associated
2 with a patch expression that is capable of processing the computer object to determine whether
3 to add the content from the patch onto the computer.

1 44. The article of manufacture of claim 37, further comprising downloading one or
2 more realization detectors, wherein each realization detector is used to check at least one
3 realization, and wherein each realization detector includes detector code to determine whether
4 states defined by realization exist on the computer and to write data to the computer object
5 concerning the existence of the determined states.

1 45. The article of manufacture of claim 37, further comprising:
2 downloading a plurality of patches to the computer, each including content to add to the
3 computer, wherein the steps of executing the realization routine, writing data to the computer
4 object, and using the computer object to determine whether the patch is compatible with the
5 installed components of the computer is performed on the computer.

1 46. The article of manufacture of claim 45, further comprising:
2 generating a list of all patches determined to be compatible with the installed
3 components of the computer; and
4 rendering the list of patches on an output device to enable a user to select the content of
5 one or more of the patches on the list to add to the computer.

1 47. The article of manufacture of claim 37, further comprising:
2 maintaining, at a network administrator system, a plurality of computer objects
3 associated with a plurality of computers on a network, wherein each computer object includes
4 the configuration information on the determined installed components of one computer on the
5 network, and wherein the steps of determining whether the state defined by the realization exists
6 on the computer, writing data to the computer object, and using the computer object to
7 determine whether the patch is compatible with the installed components of the computer on the
8 network is performed for computer objects on the network administrator system.

1 48. The article of manufacture of claim 47, further comprising:
2 maintaining a plurality of patches at the network administrator system, wherein
3 determining the states defined by the realizations, writing data to the computer object, and using
4 the computer objects to determine whether the patch is compatible with the installed

5 components of the computers on the network is performed for each patch available to the
6 network administrator system.

1 49. The article of manufacture of claim 48, further comprising:
2 generating a list of all patches determined to be compatible with the installed
3 components of the computers on the network; and
4 rendering the list of patches on an output device to enable a user of the network
5 administrator system to select the code of one or more of the patches on the list to install on one
6 or more of the computers in the network.

1 50. The article of manufacture of claim 37, wherein the content comprises a fix, and
2 wherein the state defined by the realization is capable of indicating whether the computer is
3 susceptible to a bug corrected by the fix.

1 51. The article of manufacture of claim 37, wherein determining the at least one of
2 installed hardware and software components comprises:
3 executing a detector program on the computer to process files in the computer to
4 determined installed hardware and software components on the computer.

1 52. The article of manufacture of claim 51, wherein determining the at least one of
2 installed hardware and software components comprises:
3 receiving user input indicating installed hardware and software components on the
4 computer.

1 53. The article of manufacture of claim 52, wherein the user input is received by:
2 displaying a user interface presenting user selectable software and hardware
3 components; and
4 receiving user selection of software and hardware components from the displayed user
5 interface, wherein the received user input indicating the installed hardware and software
6 components comprises the components selected from the user interface.

1 54. The article of manufacture of claim 37, wherein reading and writing performed
2 as part of adding content to the computer is restricted to the computer object on the computer.

1 55. A computer readable medium including data structures used for applying a
2 patch to a computer system, wherein the patch includes content to add to the computer,
3 comprising:
4 a computer object including configuration information on installed hardware and
5 software components in the computer;
6 a realization object including an association of at least one patch including content to
7 add to the computer and at least one realization, wherein each realization defines a state of the
8 computer, wherein the configuration information in the computer object is used to determine
9 whether the state defined by the realization exists in the computer, wherein data is written to the
10 computer object indicating whether the state defined by the realization exists on the computer,
11 and wherein the computer object is used to determine whether each patch is compatible with
12 the installed components of the computer.

1 56. The computer readable medium of claim 55, further comprising:
2 a patch expression set including code that when executed processes the computer
3 object to determine whether to add the content from the patch onto the computer.

1 57. The computer readable medium of claim 55, further comprising:
2 a realization detector object including detector code to determine whether states
3 defined by at least one realization exists on the computer and to write data to the computer
4 object concerning the existence of the determined states.

1 58. The computer readable medium of claim 55, further comprising:
2 a plurality of computer objects associated with a plurality of computers on a network,
3 wherein each computer object includes the configuration information on the determined installed
4 components of one computer on the network, and wherein the determination of whether the
5 state defined by the realization exists on the computer, writing data to the computer object, and
6 using the computer object to determine whether the patch is compatible with the installed
7 components of the computer on the network is performed for computer objects on the network
8 administrator system.